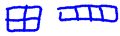
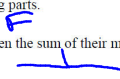


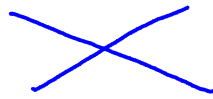
Worksheet 2.3 Postulates

Write **Sometimes**, **Always**, or **Never** to indicate your answer.

1. Given points A, B, and C, $AB + BC$ S equals AC.
2. If point B lies in the interior of $\angle AOC$ then $m\angle AOB + m\angle BOC$ S equals 180.
3. A line A contains at least two points.
4. Two points N determine a plane.
5. Through any two points there is N more than one line.
6. If two points are in a plane, then the line that contains the points is A in that plane.
7. The intersection of two planes is A/N/S a segment.
8. If two lines are cut by a transversal, then corresponding angles are S congruent.
9. If three sides of one triangle are congruent to three sides of another triangle, then the triangles are A congruent.
10. If one angle of one triangle is congruent to one angle of another triangle, then the two triangles are S similar.

Classify each of the statements are true or false.

11. The measure of the arc formed by two adjacent arcs is the sum of the measures of the arcs. T
12. If two figures have the same area, then they are congruent. F 
13. The area of a region is the sum of the areas of its overlapping parts. F 
14. If the exterior sides of two adjacent angles lie on a line then the sum of their measures is 180. T
15. Two points determine a plane. F
16. Space contains at least four points. T

17. Two lines can intersect in more than one point. F 

18. If a line lies in a plane, then all of the points on that line also lie in the plane. T

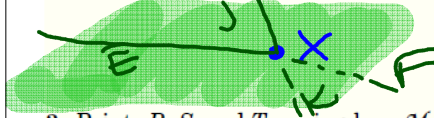
19. If two lines are cut by a transversal and corresponding angles are congruent, then the lines are parallel. T

20. If two angles and a side of one triangle are congruent to two angles and a side of another triangle, then the triangles are congruent. F

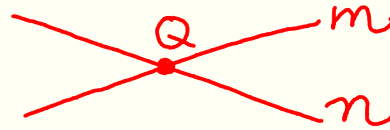
21. The area of a square is the square of the length of a side. T

Draw and label a figure for each relationship.

1. Lines JK and EF are not in plane M , but intersect plane M at X .



2. Lines m and n intersect at point Q .



3. Points R , S , and T are in plane M , but point W does not lie in plane M .

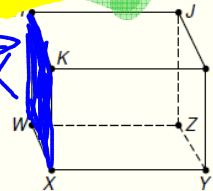


4. The intersection of planes A , B , and C is line EF .



Refer to the figure at the right to answer each question.

5. Are points H , J , K , and L coplanar? **yes**
 6. Name three lines that intersect at X . **\overleftrightarrow{WX} , \overleftrightarrow{YX} , \overleftrightarrow{KX}**
 7. What points do plane $WXYZ$ and HW have in common? **W**
 8. Are points W , X , and Y collinear? **no**
 9. List the possibilities for naming a line contained in plane $WXKH$. **\overleftrightarrow{HK} , \overleftrightarrow{HW} , \overleftrightarrow{WX} , \overleftrightarrow{XK} , \overleftrightarrow{HX} , \overleftrightarrow{KW}**

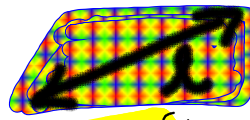


Draw and label a figure for each relationship.

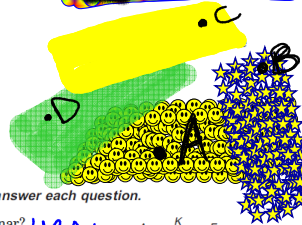
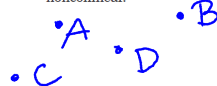
1. Lines ℓ , m and j intersect at P .



2. Plane N contains line ℓ .

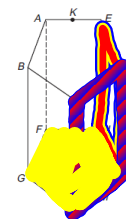


3. Points A , B , C , and D are noncollinear.



Refer to the figure at the right to answer each question.

5. Are points H , M , I , and J coplanar? **yes**
 6. How many planes are shown? **7**
 7. Name the intersection of planes ABG and CHG . **\overleftrightarrow{GB}**
 8. Name the intersection of plane ABC and \overleftrightarrow{HL} . **C**
 9. Which segments are contained in all three of the planes GFH , CDI , and EDI ? **none**
 10. List the Possibilities Tim can choose from a tan shirt, a blue shirt, and a green shirt. He can choose from black slacks or blue jeans. He can choose from a windbreaker, a sweatshirt, or a jacket. How many different outfits can he wear if he will not wear the sweatshirt with the black slacks?



$$\begin{array}{r} 3 \cdot 2 \cdot 3 = 18 \\ - 3 \\ \hline 15 \end{array}$$

Special angles



Objectives

Content Objectives

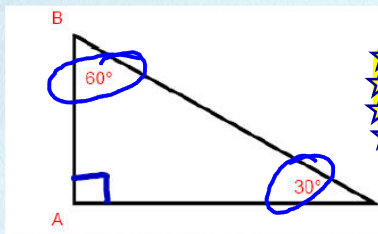
Students will learn about special angles and theorems and postulates related to them.

Language Goals

Students will express their understanding through class discussion and in writing.

Complementary angles

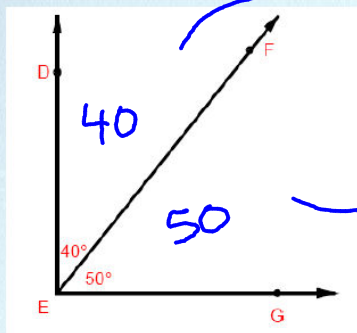
- Complementary angles are two angles whose measures have the sum 90.



Complementary
= 90°

More complementary angles

- When describing complementary angles, you can say that each angle is the complement of the other.

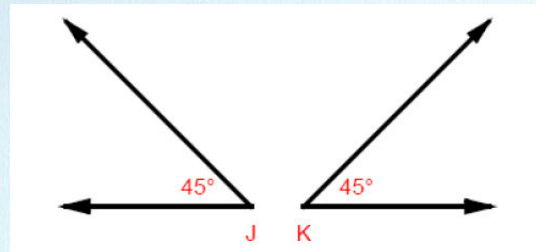


$\angle DEF$

$\angle FEG$

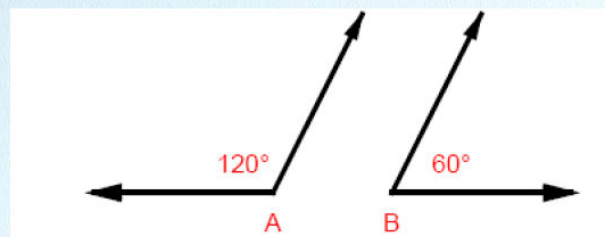
Even more complementary angles

- Angles do not need to be adjacent or in the same shape to be complementary.



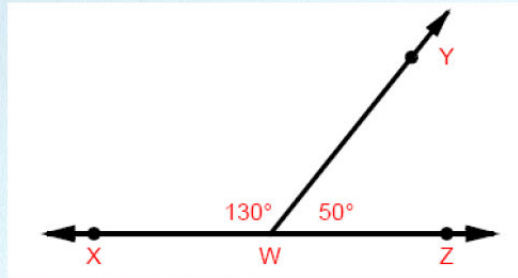
Supplementary Angles

- Supplementary angles are two angles whose measures have the sum 180.



More supplementary angles

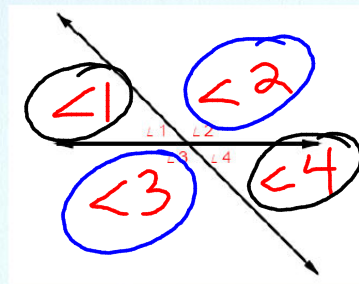
- Notice what happens when supplementary angles are adjacent.



Vertical angles

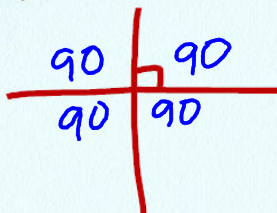
- Vertical angles are two angles whose sides form a pair of opposite rays.
- How many pairs of vertical angles are in this figure?

$$\begin{aligned} m\angle 1 &= m\angle 4 \\ m\angle 2 &= m\angle 3 \\ m\angle 1 + m\angle 2 &= 180 \end{aligned}$$



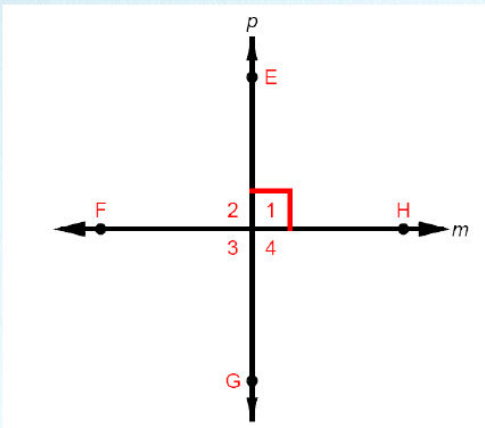
Perpendicular lines

- Perpendicular lines are two lines that intersect to form right angles (90° angles).
- Since lines that form one right angles always form four right angles, you can conclude that two lines are perpendicular, by definition, once you know that any one of the angles they form is a right angle.
- We also use the word *perpendicular* for intersecting rays and segments.



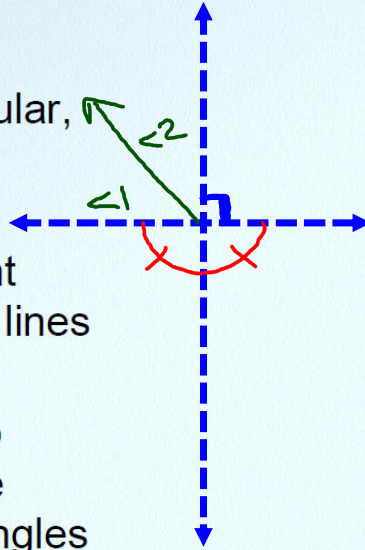
More about perpendicular lines

- Notice the mark that shows a 90 degree angle.



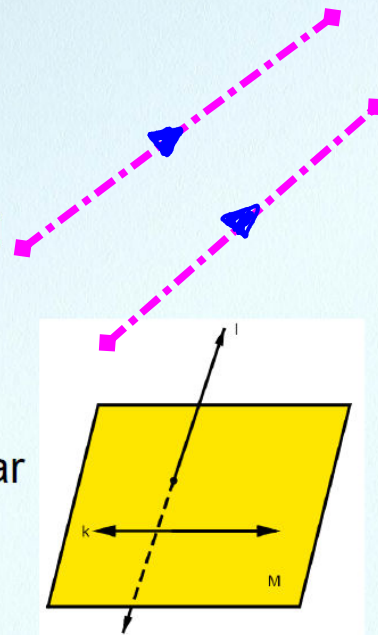
Theorems

- If two lines are perpendicular, then they form congruent adjacent angles.
- If two lines form congruent adjacent angles, then the lines are perpendicular.
- If the exterior sides of two adjacent acute angles are perpendicular, then the angles are complementary.



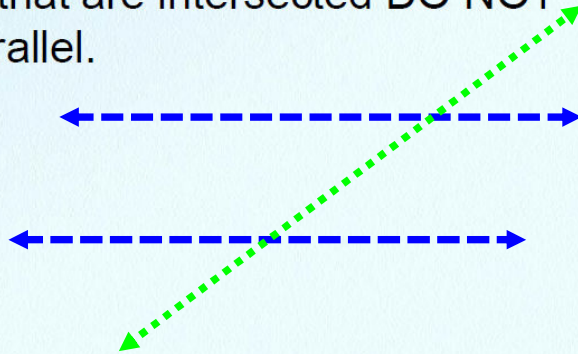
More about parallels

- Two lines that do not intersect are either parallel or skew.
- Parallel lines are coplanar lines that do not intersect.
- Skew lines are noncoplanar lines. Therefore, they are neither parallel nor intersecting.



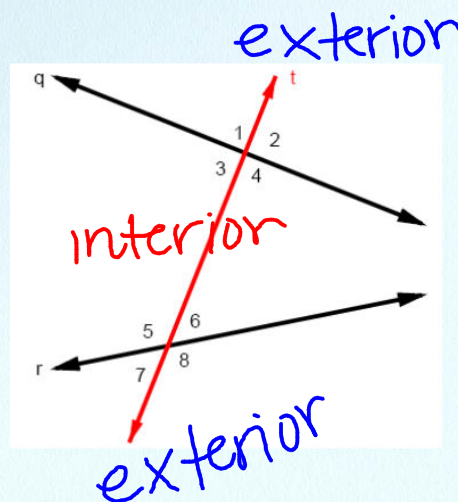
What is a transversal?

- A transversal is any line that intersects two or more distinct lines in different points.
- The two lines that are intersected DO NOT have to be parallel.



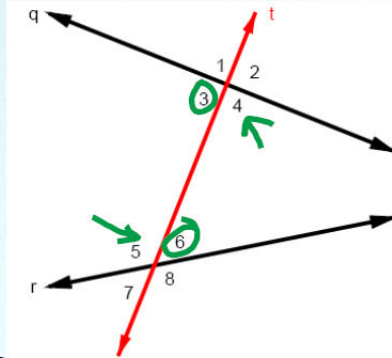
Angles formed by a transversal

- Exterior angles are outside the lines, and on the same side of the transversal.
- Interior angles are inside the lines, and on the same side of the transversal.



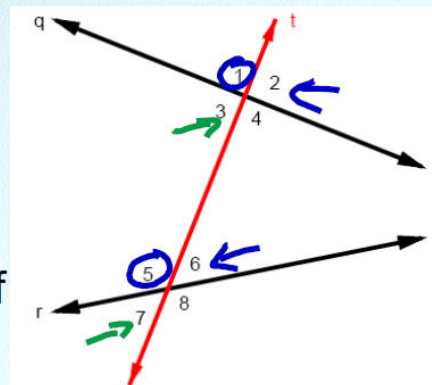
More about the angles formed by a transversal

- Alternate interior angles are two nonadjacent interior angles on opposite sides of the transversal.
- Same-side interior angles are two interior angles on the same side of the transversal.



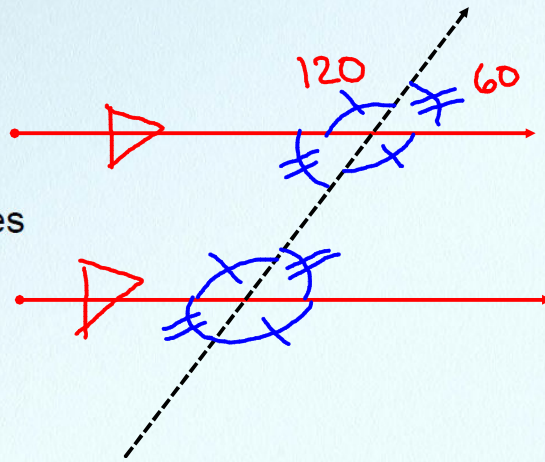
Corresponding angles

- Corresponding angles are two angles in corresponding positions relative to the two lines.
- There are four pairs of corresponding angles.



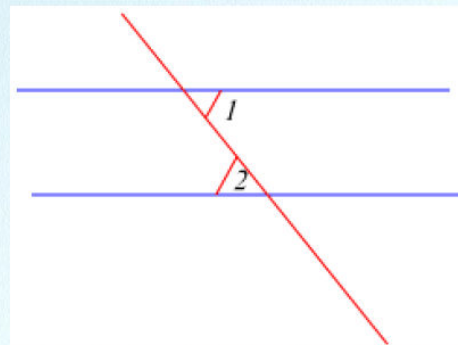
Postulate 10

- If two parallel lines are cut by a transversal, then corresponding angles are congruent.
- If two parallel lines are cut by a transversal, then same-side interior angles are supplementary.



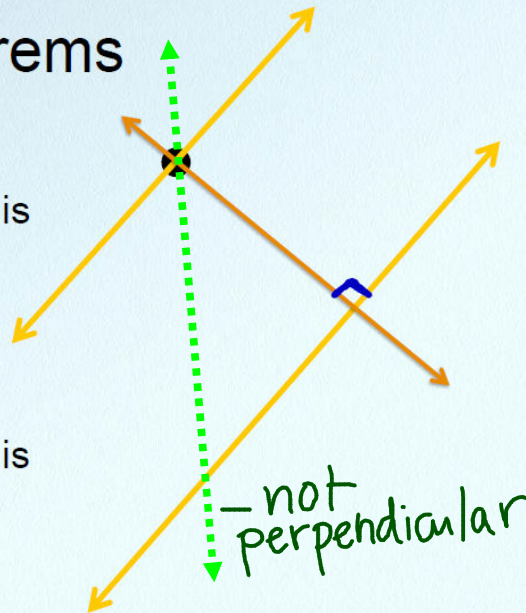
Postulate 11

- If two lines are cut by a transversal and corresponding angles are congruent, then the lines are parallel



A couple theorems

- Through a point outside a line, there is exactly one line parallel to the given line.
- Through a point outside a line, there is exactly one line perpendicular to the given line.



Did we meet our objectives?

Content Objectives

Students will learn about special angles and theorems and postulates related to them. ✓

Language Goals

Students will express their understanding through class discussion and in writing. ✓